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**CO-RELATIONSHIP OF CONSERVATION AND BIODIVERSITY
UTILIZATION AND PEOPLE LIFE STYLE IN PATTANI WATERSHED,
SOUTH THAILAND**

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Abstracts

The purposes of this research were to study the status, opinion, biodiversity in the Pattani watershed. Co-relationship was found existed in biodiversity conservation, utilization and people life style in the Pattani watershed. In addition, the impact, problems and suggestions of the people whose relationship between conservation and utilization of biodiversity and people life style in the Pattani watershed were also reviewed. In this work, 25 people were used in focus group, and 400 people were set for questionnaire. The data were analyzed in terms of frequency percentage mean, deviation and multiple regression. The findings were: 1) The opinion in terms of conservation and utilization in disease treatment, was low level, 2) The conservation and utilization for health care was in a moderate level, 3) conservation and utilization on biodiversity regarding belief was in the low level, 4) Conservation and utilization on biodiversity of conservation and utilization for traditional practice was also low, 5) Biodiversity of conservation and utilization in naming the town and city was also in a low level, and 6) relationship of conservation and biodiversity utilization was linearly interrelated with variables of people lifestyle in Pattani Watershed with a statistically significant at the 0.01 level in 4 aspects. Relationship to health care was negative and to others were positive.

Key words: Biodiversity, Conservation, Utilizing, Pattani Watershed.

INTRODUCTION

Pattani watershed is importance to study for relationship of conservation and biodiversity utilization with the style of people. This area is of more importance as it is situated in the South of Thailand. Geographically, this terrain area is characterized by mountain forests and plains that accommodate a flood basin lining in the north-south. Parts of the East and the South of this basin meet the watershed of Sankala khiri in Betong and Thanto Districts of Yala. Pattani watershed has an upstream from Sankala Khiri mountain ridge in Betong District that flow northward via districts of Thanto, Bannangsta, and capital district of Yala, towards districts of Nong Chik, and Yaring. It further routes to Pattani irrigation Dam and runs into the Gulf of Thailand in capital district of Pattani. As for Saiburi River, headwater is from various peaks of Sankala Khiri mountain ridge, and it flows via districts of Chanaeh, and Ruesoh of Narathiwat province, and onwards to Raman district of Yala before moves into the Gulf of Thailand in districts of Saiburi and Yaring of Pattani province.

Total area of Pattani watershed constitutes the catchment area of 3,858 Km², encompasses provinces of Yala, Pattani and Narathiwat and covers a population density of 185 people per km². Rainfall average for this area is 1,630 mm per year. The headwater stream in the Sankala Khiri is bordered with Malaysia. The lower area is a flatland which is suitable for agriculture and animal husbandary.

Population number is of 443,810 (Department of Environmental Quality Promotion,

2004). Ecologically, Pattani watershed is very important because it comprised of sub-ecosystems such as Hala Bala which is of tropical and mountain rainforest, as well as mangrove and swamp. As freshwater ecosystem, Pattani River with its brackish water ecosystem becomes richest sources of biodiversity. Wildlife of plants and animals as well as unique wood species is very abundant. They are, for instances, santol (*Sandoricum koetjape* (Burm. f.) Merr.), Phru, Tanghon or Jakang (*Calophyllum soulatti* Burm. f.), Lipstick palm (*Cyrtostachys renda* Blume.), Climbing Ferns, *Lygodium circinatum* (Burm. F.) Sw., the rubber family plants, and rattan family.

Among outstanding animals are for instances, Dayak fruit bats, Singapore rats, Red-cheeked Flying Squirrels, Black-handed gibbons, wild bears, wild tigers, panthers, etc. Birds include like Rhinoceros Hornbill, red tail magpie robins, Malaysian Eared Nightjar etc. (Forestry Department, 1999). For these outstanding and unique conditions, Pattani watershed is considered very biologically important for its higher diversity which is beneficial to the ecology and environment. A finding from the relationship of conservation and biodiversity utilization with that of people lifestyle in Pattani watershed was proved to be useful. Overview of a variety of utilization and biodiversity relationship to people lifestyle, especially in terms of diversity conservation and utilization with the people lifestyle was systematically studied. It was expected to be extremely beneficial to people in Pattani watershed.

RESEARCH METHOD

This study was the first to emphasize the research methodology involving with qualitative data, and in making the very completed work, it was supported by quantitative data. The actions included collection of data, data sources and other minor details. They were as follows: 1). Documentary research was conducted using relevant documents including those of biodiversity that associated with concept and theoretical overview. Biodiversity in the Pattani watershed in particular was also studied. Presenting information was thus split into Pattani watershed-relating biodiversity and Pattani watershed-relating conservation-utilization-lifestyle of Pattani people. 2). Field data collection was done in real sites and times. Collecting raw data was of 2 parts; the qualitative data and quantitative data. On the basis of information natural, research tool was divided into 2 parts; firstly interviewing part, and secondly questionnaire. Such questionnaire was set to coincide with the research objectives, and it was thoroughly examined by the experts before it was tried out to ensure the reliability of the questionnaire. 3). Randomized population sampling was conducted using multi-stage sampling procedures, and steps were the followings: Step 1 District was randomly chosen by means of stratified sampling. Such sampling divided the river basin into 3 parts; the upper, middle and lower parts, and covered urban, suburban and rural areas. As for the upper part, 3 districts of Yala province, i.e. Betong, Thanto, and Bannangsta were included. The middle part consisted of 2 districts; Krongpinang and capital district of Yala province. The lower area consisted of 4 districts in Pattani province, and they were Yarang, Nongchik, Yaring, and capital district. For each of all districts in the studied area, data collection is performed using simple Randomized Sampling method. Step 2: The sampling area was chosen from 2 districts using simple Randomized Sampling method, and a total of 18 sub-areas were resulted. Step No. 3, Sample size of each district was determined by using Yamane method. Step No. 4, Respondents were chosen as final samples to answer the questionnaire. They were selected by pre-determined proportion based on the initial survey conducted. However, sample groups for each sub-area were set to cover the multiple levels of people, and they included general people, educated and the middle-class people as well as social elite people. Also covered religion and belief basics 4). Field data collection was conducted using set framework for each province, and procedures were 1). Qualitative data collection included in-depth interviews along with conversation was recorded.

Focus group interviewing was also recorded and their questions were pre-determined. 2) Quantitative data collection was conducted by our team of researchers, and the raw data was then verified before number coded. 5). Data analysis was performed qualitatively and quantitatively. For qualitative analysis, data was preliminarily analyzed by classifying on the basis of purposes. It was followed by the use of semantic concepts in correlating with theory and research context. Applying the descriptive statistics such as the frequency, average and percentage were done for adding clarity and completeness in the analysis and data summarization by employing ready-used computer program. Analyzed results were presented in tabular form, and presented values were of frequency, percentage, standard deviation, t-test and F test.

RESULT AND DISCUSSION

Qualitative study of general conditions for relationship of conservation and biodiversity utilization with Pattani watershed of style people life style quality via interviews, focus group in Bannangsta district, Tanah Putih sub-district, Yala province and Krong Pinang sub-district, Krong Pinang district, Yala province showed that this upper region of the Pattani Basin was abundant with forests, which consisted of rainforests and agriculture of rubber planting, Longkong, durian and other types of fruits. In addition, there were many natural and biological resources such as birds and wildlife, which utilized for living and occupation by local people in the area. Tanah Putih sub-district was located in the area with a very high risk of the unrest in the 3 southern border provinces. In fact, all Pattani watershed area, from the upper, middle and lower was the unrest affected area, and coordination from local Reliable and competent people was likely necessary in the making of this research accessible and successful.

Tanah Putih village which was located 27 kilometers from Yala town and 100 kilometers away from Betong district was considered as the important Pattani watershed for its abundance and biodiversity. Majority of population was Muslims, gardener professional, mainly rubber plantation, and next were other fruits such as Durian, Longkong, Mangosteen, etc. Population was 70% farmers, 20% employed, and 10% government service, Rubber plantation was the major income source for most of people in this area. Interviewed 25 people were among local medical practitioners, *Imam* or local religious leaders, the so-called *ustaz* (religious teachers), the experienced farmers, and building technicians.

Each specific interview was conducted after general and informal discussion with local people. Various issues were brought to the discussion including history of Tanah Putih sub-district, and it was told that Tanah was soil and Putih was white, and together these 2 words meant white soil. General conditions of this sub-district was described as occupying the area of 69 km² and subdivided into 10 villages, 6 of which were flatland, and 4 were flatland with foothills. There were also villages, the so-called “progressive village” and “medium village”, both of which had population of 9,150.

Issue No. 1. Disease treatment. Interview showed that there were many biological resources being use for disease treatment in the past and present time. Villagers presented the commonly used ones in watershed, especially of the middle and upper parts. A local practitioner said he is very knowledgeable and wanted to offer such knowledge for the benefit of the incoming generations. For instance, Khoi tree which was locally known as Pohon Sina, being wild tree and in garden, and currently it was planted in front yard as an ornament plant in almost every location in Pattani Basin area; be it was from the upper, middle and lower.

In the course of treatment, sapwood was known to relieve the toothache and irritation. Its leaves were for relieve of flatulence, and seeds for carminative. Cassia with local name as

Pucuk Jaha was normally found to grow in garden as gardeners used to plant it in their land, and others brought into their homes. However, it was seen almost every road to villages. From it, villagers used to make curry for eaten with food, especially during the ceremonial parties.

Villagers in Pattani basin used cassia as an herbal treatment, analgesic to relieve pressure and ache. Stem and root of lavender was used to treat artery blockage, as sweat agent, dissolve agent for kidney and bladder stones. For Eagle wood, they employed stems and leaves for strengthen internal organs and heart, treatment of urinary incontinence, and brighten the brain. Star cactus was known to help to clean the gall bladder, lymphatic fluid in the brain and nerves as well as cure of ulcers in the nose and mouth. Dried date palm was known to help strengthen the liver healthy, relax the enteritis, and increase semen. Garlic was used as carminative agent, neutralizer of poisonous insect, and for increase body temperature as well as expectorator the trachea. Black cumin found to be a cure for every disease, increase milk production, and neutralize snake venom. Olive leaves was found to be used in treating skin diseases, urticaria, and numb disease. Boiled mangosteen shell was used in treating diarrhea, whereas boiled leaves and roots was for gallstones. Banana was known to be use as diuretic agent, relieve cough, and increase of semen. Guava leaves was known to cure diarrhea. Onions helped drive toxic in the stomach, making strong stomach, enhancing sexual performance, treatment of hemorrhoids, and leprosy.

Issue No. 2. Settlement and Town/House naming observed in Pattani watershed was related to biodiversity. For instances, this happened from Betong district down to Tanjong. “Betong” was a local name of plant; “pohon betong”, and was found growing along the mountains. As this town was mountainous area and found abundance of this plant, kampung “Betong” was named after the town. Village of Tang Mali found locally named after “kampung air melor”. “Melor” is a flower name of Jasmine. This village found located about 32 kilometers from Betong, and amid mountains with majority of population was gardener of rubber and durian fruit as the minority. It further found that residence of the particular area came from other areas such as Yala, Pattani, and Betong. Village of Chosipoh took a local name of “charoh sipoh”, which referred to an area of the upper part of Pattani basin, Thanto district. This area was rich in forests with rivers flowing down from Betong district.

Several fish species and aquatic lives were there in the water body. Word “choh” implied for river, and “sipoh” for shellfish. Village “gua badoh” rooted from 2 words of “gua” (cave), and “badoh” (rhinoceros). This village found located in Bannangsta district, which was the upper part of Pattani watershed. This was a location of beautiful forests, mountain and caves. It was thought that there was a rhinoceros in the cave.

Population of the area came from different villages, and took various occupations. Some was rubber-streaked employees. Others came and bought land for farming and gardening. Currently, the said cave was still there and resided by Buddhist monks. Bannangsta locally called “benae seta” (from field and marian plum tree), is now a district in Yala province with its location in the upper part of Pattani watershed. However, some people referred “benae” as field, and “seta” as moment (not long) or seasonal because population of this town planted rice on seasonal basis, i.e. once a year. Bannagsta populations came from different areas.

Bannagsta as a town in the upper part of Pattani watershed, was very famous in setting the popular weekly market 2 times per week (Wednesday and Saturday). Krong Pinang district locally pronounced as “krongpinae” which referred “krong” to city and “pinae” to betel palm. Major area of this town found as flatland on mountains, which run in parallel with main road of 410 Yala to Betong. Population of this town was approximately 54.47 km² or 34,044 acres. Its borders were Tanah putih, Bannangsta in the north, Bannangsareng, Capital district of Yala in south, Beoming, Raman district in the east, and Sa-aek, Purong, Yala province in the west.

There were 9,307 population and 1,538 households in the Krongpinang territory with gardener was the profession of the majority. Dusun Kunyi was the village in Sa-aek sub-

district. Words “dusun” referred to woods, and “kunyi” to turmeric. Villages of these areas were location of mountains with many species of plants. “Kunyi” or turmeric was the plant that people in the past to the present used for cooking besides using as herbs and crops as well as commercialized item in fresh bazaar in Yala province. Huaikrating; a village in Pattani watershed was located in Krongpinang district, Yala province. Its location found to be at the junction of Krongpinang and Bannangsta and lined with mountains, tropical forests and rivers that flew into Pattani River.

Its population came from various outside regions. They came for purchasing estate and for occupations, such as rubber workers or for being gardeners. Village of Kasang locally called “resae” was in Tanah Putih sub-district of Bannangsta, Yala. Word “resae” referred to a plant species found growing well in mountain edge. Benaekuwae came from “bena” for “field” and “kuwae” for “kuwang”, which was popular by villagers for use in making Dusongmangoh referred to mangosteen village was located Sa-aek sub-district, Krong Pinang district. Keladi; a village in KrongPinang district, came from word “keladi” referring to cocoyam. Purong; another village in KrongPinang, referred coconut shell. PadangSeto came from local words of “padang” for field and “seto” for santol. Village of TaloSeto came from local words of “talo” for gulf and “seto” for santol. Village Berangae came from local word “berangae” for nut. BechohKeranyi came from local words of “bechoh” for rupture and “keranyi” for velvet tamarind, was also located in KrongPinang sub-district.

Kubae Purong village located in KrongPinang district came from 2 words; kubae for waterhole or swamp and purong for coconut shell. Ban Bongo located in Phase No. 6, KrongPinang sub-district also had rooted from word “bongo” which referred to bongor tree. Similarly, BanKadudok in Sa-aek sub-district, KrongPinang district, was rooted from word “kadudok”, a type of tree. Jaha or Yaha sub-district rooted from word “jaha”, referred to Cassod tree. Ban Patae rooted from “patae”, a type of tree. Ban MatoRusa rooted from words “mata” (eye) and “rusa” (deer). Conducting focus groups on relationship of village naming and biodiversity in the lower part of Pattani watershed showed similar findings. For instances, Nongrad; locally known as “kubaebadok” was in Mayo district Tanjong; a type of tree, i.e. bullet wood was located in Yaring sub-district. Yamu or Jamu rooted from “jamu” (rose apple). Ban Kasok also rooted from a type of plant. Pauh Manis referred to sweet mango. Ban Aho referred to yellow bamboo. Ban Piya rooted from “piya”, a type of plant. Banmulong was also came from word “pohon mulong”, a type of tree. Ban Charang that referred to deep forest was locally known as Cherae.

Issue No. 3. The meeting on the people belief in Pattani watershed relating to biodiversity was held. Belief in this research presented traditional faith of the community in Pattani watershed. Using focus groups, it was found that betel nut and betel being used on the occasion of prenatal care with a midwife, which locally called “tok Bidae”. Pepper was reported to be used for getting rid of the ghost. Jujube leaves was used in bathing the corpse, the process of which was locally called “mandi mayat”. It was also used for healing ghost-within-condition as did the turmeric and betel leaf. Black palate cat was believed to be a wonderful cat. Bringer Snake or other similar symbolized animal arose was believed to be related with some certain situations. Night owl crying was believed to be sign of the coming death. Beliefs of Community in Pattani watershed regarding goats, the findings showed that goats are very important animals for Muslims in at least 2 occasions.

On the religious beliefs as it was prescribed in the religious Book; Quran, Muslims performed welcoming ceremony for their new birth (AKIKAH). For a new birth son, Islam commands Muslims to slaughter 2 healthy goat or a sheep aged 2 years or older with no trace of impairment or deficiency in any organs. But for new birth daughter, it required just 1 similar

healthy goat or sheep. Conducting this ceremony was set on day 7, 14 or 21 after new birth. Sacrifice or slaughter a goat found to perform on vow to the God. Failure to perform this was considered as sin-committing.

Furthermore, slaughtering sheep and cattle found to conduct on Eidil Azha day for the purpose of providing food to the people and the poor. Eidil Azha falls on the 10th day of Islamic calendar month, Zul Hijjah, which is also the Hajj month. Celebrating Eidil Azha, locally called “hari raya haji”, found to be observed by Muslims in Pattani watershed and worldwide. On such day, Muslims performed prayer together and slaughter of animals such as cows, goats or sheep, whose meat was then distributed to the poor. Slaughtering an animal was locally known as Kurbaan. As a tradition from the elders, slaughtering of goats was set for uncircumcised ceremony, which locally called “masuk jawi”, on Prophet Birthday anniversary, and any charity days.

Quantitative Study Results, Personal social and economic characteristics. Most respondents were 52.8% male and 47.3% female. Academic background showed 31.5% were holders of bachelor degree or higher. Their average income of 5,000 to 10,000 Baht was majority (41.8%). Most people in the community areas were of Pattani river basin origin, i.e. 53.8% from the lower part areas (Yarang, NongChik, YaRing, MaeLan, and Capital district of Pattani), 24.8% from the upper part (Betong, Than To and Bannangsta), and 21.5% from middle part (KrongPinang and Capital district of Yala).

2. Values of disease treatment-associated conservation and sustainably biological resource utilization. Level of biodiversity utilization for the disease treatment using herbal and medicinal grasses was moderate, lower level was for the cases of disease treatment by using herbal plants, typically herbal cassava, betel palm seed, mushrooms, and aquatic animals, respectively. Lesser level of biodiversity exploitation was observed from cases of disease treatment using herbal ferns, algae, birds, insects, wild animals, amphibian animals, and reptiles, respectively. As for conservative approaches to health care, a moderate level was observed, and the first was medicinal grass species whereas the next were herbal plants, cassava species, betel palm species, mushroom species, algal species, aquatic animal species, and wild animal species. For low level of conservative approaches to health care included conservation of fern species, bird species, insect species, amphibian species, and reptile species.

3. Values of traditional belief and practice-associated conservation and sustainably biological resource utilization. Moderate level of beliefs regarding to biodiversity exploitation were those of community in using plants (such as lime, bamboo) for prevention of poisonous animals like snakes, scorpions, and centipedes. Also, there were beliefs relating to worms or parasites coming out of human body, the black palate of a cat, betel/betel nut, and abusing animals by pregnant women. Beliefs at low level were those of banyan tree, birds, butterfly lizard, wildlife entering the village such as wild boar and deer, frogs, dogs (such as howling during the night), and local plants such as jasmine, and Bukulima. Another moderate level of biodiversity exploitation was the cultural traditions and practices, and these in descending order were uses of plants or animals for opening event of the new house, and for orthopedic or massaging treatment. Of those low levels in descending order included the uses of plants or animals in various events of starting tapping rubber, prenatal care with traditional doctors, paddy fields and rice planting, snake poison cured by snake charmers, and a ritual exorcism.

4. House and town naming values-associated conservation and sustainably biological resource utilization. For the house and town naming, moderate levels were cases in descending order of the naming after perennials, local plants, and ornament plants. Cases of low levels were in descending order of the naming after bamboo, wild plants, betel species, fern species, tapioca or sago, rattan, parasite species, reptiles, cassava or related species, birds, fruits, fishes, and insects.

5. People lifestyle values-associated conservation and sustainably biological resource utilization. Variance analysis showed that the conservation and biodiversity utilization in Pattani

watershed was linearly related with variables of cultural diversity in all 4 aspects with statistically significant at the 0.01 level. The regression equation was thus created for calculating the multiple correlation coefficient, The predictor weight in standard and raw scores. It also permitted the creation of multiple regression equation, and the standard score weight for conservation in cases of health care. This resulted in negative effect on conservation and biodiversity utilization in Pattani watershed with score of -113. Factors relating to diseases treatment, beliefs, and naming were positive effected with scores of .135 and .288 .550, respectively

Qualitative Study that results from focus group on lifestyles of Pattani watershed people in relation to biodiversity conservation and exploitation were as follows. 1. Beliefs and Traditional Practices that relatedness of beliefs and traditional practices with religion was observed clearly in the lower part of Pattani watershed. The 2 communities; Muslim and Buddhist enjoyed their freedom in choosing their religion based on their different belief in religion or sect. They lived together in harmony without any conflict. The finding is in agreement with Preecha Noonsuk (2008 : 175) who stated the influence of Brahman, found that there are many archaeological sites in Pattani watershed. His research used the method of historical and archaeological survey shows the prosperity of trading and migration of Brahmanism in Pattani Watershed, Peninsular Thailand and Southeast Asia.

It appears at least 8 main locations. research used the method of historical and archae This condition corresponds to the Buddhist principle, i.e. no hurt to others as well as to Islamic principles, i.e. Islam is the way that led to strengthen interaction and courtesy for each other (Umar Ubaid, Hasana Mazlan Mahama, 2007). People in Southern, in particular the Buddhist had their religion study as monks. While some people inherited religious practices from Hindu and Brahmin priests. It was observed that villagers used the natural resources such as certain trees or animals for religious ritual practices. Other traditions which rooted from beliefs and customs were mostly a combination of religious principles and certain practices that continuously inherited from past to present. For instance, case of new born when child was given a taste of palm date and Zamzam water (Pure water from the city of Makkah, Saudi Arabia). As a matter of fact, such child was mouth-wiped by gold rings as well.

In marriage ceremony, there was groom rally with each tray for the bride or bridal family being filled with necessity items such as cloth, shoes, jewelry and a dowry. Plant varieties in the groom rally also included betel leaves and nut. Rally walking distance to the home of the bride was 100-200 meters. These were exactly inconsistent with report of Pasrinna Pannaen (2007), who referred the ecosystem as the relationships of organisms and environment surrounding a particular area. Moreover, in case of death and sunnat (Trimming the tip of the penis), plants were also used, as examples, dead jujube leaves was used with mortar for showering the dead, or use of banana as a straddle seat for tip-trimming child. Use of betel leaves and yellow-color sticky rice were occasionally observed in the practice of Sunnat. For healing treatment of the penis, foods were controlled and some banned items included pumpkin, papaya, jackfruit, mushrooms, watermelon, etc. Also foods with retard healing side effect and scarring process, such as Sato and Niang seeds, as well as eggplant.

Other religious beliefs were seen having connection with religious principles. For instances, a ban on deforestation for no reason, limited use of natural resources and avoiding superfluous use, killing only animals with harm and danger to human life or for use as food, and eating only animals that were approved by religious principle. These environmental conservation principles were consistent with that of environmental resource management reported by Kasem Jankeow (2001), who quoted the knowledge of natural resources, nurturing rare resources with caution, balancing the production with consuming rates as very important in

resource management.

2. City and Home Naming that settlers in the early period chose their location in the districts for their occupation, and resourcefulness for crop growing and animal breeding for everyday life uses. In another words, they chose location that met the 5 living factors in terms of foods, shelter, medicine and clothing. It was, therefore, well observed that naming of home and town by people in Pattani watershed communities emphasized primarily the geographic structure, followed by using certain unique tree species in the area, and certain place with its significant phenomenon in the early period. For the later period, naming of home and town was however after the name of important officer who was appointed by the government or higher authorities. for example As Pattani watershed with its residents being mostly Muslim and using Malay as a communicating language, the naming of house and town was based mainly on Malay language. For some exceptions were those of Thai-like or Thai language observed in certain places, and as instances, “Kubae Badok” or “NongRad” which was changed into Thai, “Tanjong” changed to “Laem”, “Pauh Manis” to “MuangWaan” and so on. These so named because the early people were very dependent to the environmental conditions.

As the 4-living factors were seen associated with natural resources and environments, these people habituated to plants and animals as well as their residential physical conditions. Naming the house and town with environmental designation was seen convenient and easily memorizing. Such the cases were consistent with the concept of Raatree (1999), who quoted the operation for the natural resources and environmental conservation encompassing the participation in local natural resource management likes shared in breeding plants and in community forest care. This made people very committed and attached to the natural environment. As regard to Thai language was using in place of Malay, it was likely to cause change in original Malay language, and resulting loss of the real background understanding for the villages. So, conserving the original name not only saves the original from distorted but also retains its reality details contained within.

3. Disease treatment that Basically, human must expose to illness, and people in the area believed and have faith in whatever happened that has already been destined. But for the illness, when it is exposed, treatment should be taken within human ability. A cure is from the God. Muslims in Pattani watershed respect and have faith in religious principles. In Islamic principles, protecting from disease and illness is better than curing it. Muslims do, therefore, understand that whatever is forbidden in Islam, it implies the harm and danger to humans, and should be avoided. For instance, alcoholic drink is strictly prohibited for there are many negatively physical and mental effects. Prohibition in Islamic view encompasses not only the drinking but also the purchase and sale of alcohol and drunk drugs.

Local wisdom of the Pattani watershed communities that still in use in disease treatment was that of midwife, bone doctor, snake charmer, penis-tipping doctor (Tok Mudeng), sorcerer and herbalist. Midwife was observed to assist the infant and mother care for duration of 40 days after birth, and to prescribe medication and diet. Hot treatment was seen prescribed for new birth mother for 40 days. Penis-tipping doctor was observed to assist children (Aged in years: 13-15) in the so-called “Sunnat” practice, which was considered to be mandatory. Tok Mudeng was seen to tip the penis end using modern equipment combined with modern medicine and herbs. Tok Mudeng likes midwife was often seen to inherit from generation to generation. Bone doctors had expertise in combining bone to bone by simply using citation of Qur'an, different sizes of bamboo plates for supporting the fractured bone during treatment. Fractured bone treatment was seen to initiate with massage using oil mixed with lime, betel chewing with pepper, and a little lemon juice. Fractured and displaced bone was then adjusted into its place by carefully pulling and connected. At this stage, the patient was seen to endure pain. Once the bone was in place, cloth wrapped and bamboo support was to follow. During bone treatment, exposing water to the treated area was strictly prohibited. Treatment procedure of different bone

doctors was also different, especially the massage oil mixture used.

In Malay language, the herbs included leaves of Brengoh, Taejong, Dahakari, Yaali, and Medeng, and they were pounded with turmeric as well as using rice for casting with a broken mask on the bamboo support. Daily during bone treatment, the effected bones were to be massaged and oiled. Diet was also controlled, i.e. cassava was prohibited. Local snake charmer treated the bitten by applying the herbs and Quran recitation asking for blessings and cure from God. Used herbs included catnip and the mostly used was Philipine violet (*Barleria lupulina* Lindl.) that was employed for sucking the venom out. Sorcerer helped the unleashing of demonic spirit by reading the magic spells.

Environmental resources to be used in this practice included betel, betel leaves, turmeric, rice, jujubeleaves, pepper, salt, sand, water, and so on. Procedures of each one might be varying, and use of steel in rituals was also observed. For Islamic principles, the release by reciting other text rather than Quran was considered as astray. In addition, the elders with local wisdom of herbs used for treating basic and common diseases such as fever, body aches, abdominal pain, headache, and so on. Treating heavier diseases such as hernia, hemorrhoids, diabetes, paralysis and seizures or epilepsy and so on, was also practiced by these elders. The above traditions were seen likely to reduce their role and popularity due to the media intervention and influence, as seen by observation that less affect to younger generation. Continual reduction of traditional doctors was also observed as their replaces and influence were transferred to modern doctors with their superior in treating specialty, easy availability, and faster recovery, despite negative impact in the long run.

To these findings, it was found consistent with studies of Suwat Tonghoam (2001), who investigated the cultural change in relation to primary factors in disease treatment using herbs that declined due to modern medicine took this bigger role. Qualitative Study 1, Disease Treatment-associating Values of the Biological Resource Conservation and Sustainable Utilization. Conservation and utilization for disease treatment was of moderate level when referring to application of grass type of herbs for disease treatment Grasses has many species with their short lives, abundance and common occurrence. Those inferior in descending order were disease treatment application from perennial herb, cassava, betel, mushrooms and aquatic animals. Less level was the case of disease treatment utilization from ferns, followed in descending order by disease treatment application from herbal taro, algae, birds, insects, wild animals, amphibian animal, and reptiles. Moderate level was observed in case conservation and utilization for health care using herbal grass; followed in descending order by using perennial herbs, cassava species, betel, mushrooms, algae, aquatic animals, and wild animals. Low level was observed in the case of conservation and utilization from ferns; followed in descending order by taro species, bird species, insects, amphibian, and reptiles.

2. Belief and Traditional Practice-associating Values of the Biological Resource conservation and sustainable utilization. Moderate level was observed in the diversity in cultural beliefs that were related to biological diversity in cases of beliefs in using plants (such as lime, Akar ulat Mojoh, bamboo) in the prevention of poisonous animals like snakes, scorpions, centipede; followed in descending order by beliefs concerning to worms or parasites that releasing from the body, to black palate of a cat, betel leaves-betel, jeopardizing animals by pregnant women. Beliefs scored low level were in descending orders beliefs relating to banyan tree, birds, iguana, wild animals entering into the houses such as wild boar, deer, as well as beliefs relating to frogs and dogs (such as howling during the night), and also beliefs concerning local plants like jasmine, Bukulima. These findings on beliefs were consistent with that of Sawad (1999), who quoted beliefs and buildings of people in Pakpayoon district, Phatthalung province were related to biodiversity, and as an example was pagoda-statue, and so on. Also

moderate level was for cases concerning traditional practices with the conservation and biodiversity application, and those in descending order were the use of plants or animals in new house opening event, use plants or animals, use of, orthopedic doctors, and massage doctors. However, low level in descending order were use of plants and animals in event of tapping rubber start, in prenatal care with traditional doctors, in the paddy fields and rice, use of plants or animals by snake charmers, and in ritual exorcism.

3. Home and Town naming-associated Values of the Biological Resource Conservation and Sustainable Utilization. Moderate level for naming of the house and town referred to case of naming after perennial trees, whose lives were long enough to be used in such naming. The findings were coincided with that of Sattapong (2002), who studied household names in Khuankhanun district, Phatthalung province, and reported that there were house name prefixes that indicated to plants like BanPho, BanSainNgam, and so on. Those subordinated cases in descending order were cases of prefixes relating to local trees, and ornament species. Low level cases in descending order were prefixes from bamboo, wild plants, betel, ferns, sago, rattan, parasitic plants, reptiles, cassava species, birds, fruits, fishes, and insects.

4. Relations of the People Lifestyles and Biodiversity Conservation and Utilization of Pattani Watershed people. Results of variance analysis showed that the biodiversity conservation and utilization in Pattani watershed was linearly related with variables of the 4-aspect lifestyles with statistically significant at the .01 level. This signified that there were important roles in determining living lifestyles of communities in the Pattani watershed that ranged in high level directly proportional to the time length of native communities from their ancient time. The finding is in agreement with Suthi Thepsuriwong & Benchawanhuan, (2004). Regression equation was thus created and used for calculating the multiple correlation coefficients, the importance weight of the predictors in standard and raw scores. Also included was the creation of the multiple regression equation, the importance weight of the standard scores for factors regarding to conservation to health care. Resulting negative effect was observed in samples of the biodiversity conservation and utilization in Pattani watershed score of -.113.

However, the health care that required to cut trees or to kill animals, this caused loss of biological resources in the area. The finding is in agreement with Somyot Thungwa *et al* (2000) who stated the forests were largely cut by concession, leading to this area of era and government policies and strategies for conversation. This has had a direct impact on land use, and created conflict as government attempts to prevent forests settlement and some group of villages wish to establish community forests and use the forest productivity. Sustainably meanwhile, another group wish to exploit forest commercially. Accordingly, with animal and plant numbers were reduced, a negative effect as the above findings was likely to be observed. As for factors of disease-treating utilization, biodiversity-relating beliefs, and biodiversity application in naming house and town, it was shown to contribute positively to the biodiversity conservation and utilization in Pattani watershed samples with score of .135, .288, and .550 respectively. The finding is in agreement with kasem Jankeaw (2001)

CONCLUSION AND SUGGESTION

Co-relationship was found existed in biodiversity conservation, utilization and people life style in the Pattani watershed. The findings were relationship of conservation and biodiversity utilization was linearly interrelated with variables of people lifestyle in Pattani watershed with a statistically significant at the 0.01 level in 4 aspects.

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